

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): An image forming apparatus including hardware resources used for image formation, an application for performing processes on image formation, and a platform that exists between the application and the hardware resources, the platform including an operating system and at least one control service to control an execution of each requested process of the hardware resources according to a function call from the application, wherein interprocess communication is performed between the control service and the application, and the hardware resources include at least a printer and a scanner, the image forming apparatus comprising:

a virtual application service that is provided between the application and the platform, the virtual application service is configured to operate as a client process for the control service and to operate as a server process for the application, and

a wrapping part configured to convert a function called by the application, and perform a function call to the control service by using the converted function, wherein the wrapping part is included in the virtual application service.

Claim 2 (Original): The image forming apparatus as claimed in claim 1, wherein the wrapping part converts the function if there is a version difference between the function used by the application for the control service and a corresponding function in the control service.

Claim 3 (Original): The image forming apparatus as claimed in claim 2, wherein the wrapping part determines whether there is the version difference by referring to information indicating that a version of the corresponding function in the control service has been changed.

Claim 4 (Original): The image forming apparatus as claimed in claim 1, wherein the wrapping part converts the function by adding at least a dummy function or at least an argument if the number of functions or the number of arguments is different between the function used in the application for the control service and the corresponding function in the control service.

Claim 5 (Withdrawn): An image forming apparatus that includes an application for performing processes on image formation and a control service for performing system side processes according to a function call from the application, the image forming apparatus comprising:

a wrapping part configured to select messages to be sent to the application from among messages sent from the control service.

Claim 6 (Withdrawn): The image forming apparatus as claimed in claim 5, wherein the wrapping part selects the messages by referring to information indicating predetermined messages that should not be sent to the application.

Claim 7 (Cancelled).

Claim 8 (Previously Presented): The image forming apparatus as claimed in claim 1, the image forming apparatus comprising:

a version check part configured to determine whether a version of a set of functions used by the application for the virtual application service is within a predetermined range that the virtual application service can support.

Claim 9 (Original): The image forming apparatus as claimed in claim 8, wherein the version check part obtains the version of the set of the functions from the application, and determines whether the version is within the predetermined range by referring to information including the predetermined range.

Claim 10 (Previously Presented): The image forming apparatus as claimed in claim 1, the image forming apparatus further comprising:

a version check part configured to determine, function by function, whether a version of a function used by the application for the virtual application service is within a predetermined range that the virtual application service can support.

Claim 11 (Original): The image forming apparatus as claimed in claim 10, wherein the version check part obtains the version of the function from the application, and determines whether the version is within the predetermined range by referring to information including the predetermined range.

Claim 12 (Currently Amended): A method performed by an image forming apparatus including hardware resources used for image formation, an application for performing processes on image formation, and a platform that exists between the application and the hardware resources, the platform including an operating system and at least one control service to control an execution of each requested process of the hardware resources according to a function call from the application, wherein interprocess communication is performed between the control service and the application, and the hardware resources include at least a printer and a scanner, the method comprising:

converting a function called by the application; and
performing a function call to the control service by using the converted function,
wherein a virtual application service that is provided between the application and the platform operates as a client process for the control service and operates as a server process for the application, and
wherein the converting is performed by the virtual application service.

Claim 13 (Original): The method as claimed in claim 12, wherein the image forming apparatus converts the function if there is a version difference between the function used by the application for the control service and a corresponding function in the control service.

Claim 14 (Original): The method as claimed in claim 13, wherein the image forming apparatus determines whether there is the version difference by referring to information indicating that a version of the corresponding function in the control service has been changed.

Claim 15 (Original): The method as claimed in claim 12, wherein the image forming apparatus converts the function by adding at least a dummy function or at least an argument if the number of functions or the number of arguments is different between the function used in the application for the control service and the corresponding function in the control service.

Claim 16 (Withdrawn): A method performed by an image forming apparatus that includes an application for performing processes on image formation and a control service for performing system side processes according to a function call from the application, the method comprising:

selecting messages to be sent to the application from among messages sent from the control service,

wherein a virtual application service operates as a client process for the control service and operates as a server process for the application, and

wherein the selecting is performed by the virtual application service.

Claim 17 (Withdrawn): The method as claimed in claim 16, wherein the image forming apparatus selects the messages by referring to information indicating predetermined messages that should not be sent to the application.

Claim 18 (Cancelled).

Claim 19 (Previously Presented): The method as claimed in claim 12, the method further comprising:

determining whether a version of a set of functions used by the application for the virtual application service is within a predetermined range that the virtual application service can support.

Claim 20 (Original): The method as claimed in claim 19, wherein the virtual application service obtains the version of the set of the functions from the application, and determines whether the version is within the predetermined range by referring to information including the predetermined range.

Claim 21 (Previously Presented): The method as claimed in claim 12, the method further comprising:

determining, function by function, whether a version of a function used by the application for the virtual application service is within a predetermined range that the virtual application service can support.

Claim 22 (Original): The method as claimed in claim 21, wherein the virtual application service obtains the version of the function from the application, and determines whether the version is within the predetermined range by referring to information including the predetermined range.

Claim 23 (Currently Amended): A computer readable storage medium encoded with instructions which when executed by a computer cause a processor to execute a method for causing an image forming apparatus, including hardware resources used for image formation, to execute wrapping processes, wherein the image forming apparatus includes an application for performing processes on image formation, and a platform that exists between the application and the hardware resources, the platform including an operating system and at least one control service to control an execution of each requested process of the hardware resources according to a function call from the application, wherein interprocess communication is performed between the control service and the application, and the hardware resources include at least a printer and a scanner, the method comprising:

converting a function called by the application, and performing a function call to the control service by using the converted function,

wherein the method is included in a virtual application service that is provided between the application and the platform, the virtual application service operates as a client process for the control service and operates as a server process for the application.

Claim 24 (Previously Presented): The computer readable storage medium as claimed in claim 23, wherein the function is converted if there is a version difference between the function used by the application for the control service and a corresponding function in the control service.

Claim 25 (Previously Presented): The computer readable storage medium as claimed in claim 24, wherein it is determined whether there is the version difference by referring to information indicating that a version of the corresponding function in the control service has been changed.

Claim 26 (Previously Presented): The computer readable storage medium as claimed in claim 23, wherein the function is converted by adding at least a dummy function or at least an argument if the number of functions or the number of arguments is different between the function used in the application for the control service and the corresponding function in the control service.

Claim 27 (Withdrawn): A computer readable storage medium encoded with instructions which when executed by a computer cause a processor to execute a method which causes an image forming apparatus to execute wrapping processes, wherein the image forming apparatus includes an application for performing processes on image formation and a

control service for performing system side processes according to a function call from the application, the method comprising:

selecting messages to be sent to the application from among messages sent from the control service,

wherein a virtual application service operates as a client process for the control service and operates as a server process for the application, and

wherein the selecting is performed by the virtual application service.

Claim 28 (Withdrawn): The computer readable storage medium as claimed in claim 27, wherein the messages are selected by referring to information indicating predetermined messages that should not be sent to the application.

Claim 29 (Cancelled).

Claim 30 (Previously Presented): The computer readable storage medium as claimed in claim 23, the computer program further comprising:

determining whether a version of a set of functions used by the application for the virtual application service is within a predetermined range that the virtual application service can support.

Claim 31 (Previously Presented): The computer readable storage medium as claimed in claim 30, wherein the version of the set of the functions is obtained from the application, and it is determined whether the version is within the predetermined range by referring to information including the predetermined range.

Claim 32 (Previously Presented): The computer readable storage medium as claimed in claim 23, the computer program further comprising:

determining, function by function, whether a version of a function used by the application for the virtual application service is within a predetermined range that the virtual application service can support.

Claim 33 (Previously Presented): The computer readable storage medium as claimed in claim 32, wherein the version of the function is obtained from the application, and a determination decides whether the version is within the predetermined range by referring to information including the predetermined range.

Claim 34 (Currently Amended): A computer readable medium storing program code for causing an image forming apparatus, including hardware resources used for image formation, to execute wrapping processes, wherein the image forming apparatus includes an application for performing processes on image formation, and a platform that exists between the application and the hardware resources, the platform including an operating system and at least one control service to control an execution of each requested process of the hardware resources according to a function call from the application, wherein interprocess communication is performed between the control service and the application, and the hardware resources include at least a printer and a scanner, the computer readable medium comprising:

converting a function called by the application; and
performing a function call to the control service by using the converted function,

wherein the method is included in a virtual application service that is provided between the application and the platform, the virtual application service operates as a client process for the control service and operates as a server process for the application.